

ORAL COMMUNICATIONS

Session 1 : FUNCTIONAL AEROGELS

KEYNOTE 1 :

1-1 Improvement of structural/mechanical properties of low

density hybrid gels based on siloxane and hydrocarboncrosslinks

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1-2 Multifunctional green silica/ silsesquioxane – silk fibroin aerogel hybrids:

from environmental sustainability and thermal insulation to dual-porous scaffolds for bone tissue engineering applications.

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1-3 Flexible and stimuli responsive porous polysilsesquioxanes.

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1-4 Bioinspired Synthesis of Aerogels

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1-5 Superinsulating, machinable, biopolymer-silica hybrid aerogels: Impregnating freeze-dried, nanofibrous pullulan sponges with silica aerogel

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Session 2 : AEROGELS CHARACTERISATION

2-1 Determining mechanical properties on different length scales from adsorption analysis combined with in-situ dilatometry

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2-2 High-Pressure Torsional Braid Analysis (HP-TBA).

A new technique for assessment of thermal transitions and changes in moduli of polymers exposed to supercritical or compressed fluids

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Session 3 : FUNCTIONAL AEROGELS

- 3-1 Synthesis and Characterization of High-Strength, High-Temperature, Flexible, Water-Resistant Polyamide Aerogels**
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- 3-2 Poly(urethane-acrylate) aerogels via radical polymerization dendritic urethane-acrylate monomers with rigid versus flexible cores**
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- 3-3 Environment-friendly phenol mineralization with Cu- and Fe-5,10,15,20-tetrakis(4-aminophenyl)porphyrin complexes immobilized in a silica aerogel matrix**
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- 3-4 Silica-based composite materials reinforced with natural fibers**
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- 3-5 Strategy for coating of organic aerogels using spouted bed technology**
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- 3-6 Synthesis of low density and low thermal conductive MTMS based flexible aerogels by refluxing method.**
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Session 4 : INDUSTRIAL APPLICATIONS OF AEROGELS

- 4-1 A Market Outlook for the Aerogel Industry.**
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- 4-2 Aerogels as High-Performance Insulation Materials by BASF**
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- 4-3 Effective Dispersions of Silica Aerogels in Plaster for Manufacturing Cost Competitive Thermal Insulating Building Materials**
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- 4-4 Three routes for superinsulating, silica aerogel powder production: material quality and economic considerations**
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- 4-5 Novel circular economy business model of high-added value products for energy efficiency: from C&DW to aerogels**
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- 4-6 Oil mist filtration on fibrous filters modified with MTMS-based aerogel – aerogel sorption capacity and filter efficiency**
Bartosz Nowak¹, Marta Bojarska^{1,2}, Jakub Gac¹
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- 4-7 Preparation of 3-D Polymer Aerogel Fiber Textiles**
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- 4-8 Scaling Airloy: Design, Construction, and Cost Modelling of a Pilot Plant for Mechanically Strong Polymer Aerogel Monoliths**
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Session 5 : AEROGELS FOR ELECTROCHEMISTRY AND CATALYSIS

KEYNOTE 2 :

- 5-1 Optimizing Nanomaterials-Based Electrodes for Electrochemical Energy Storage and Conversion**
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- 5-2 Direct Ink Writing of Carbon and Graphene aerogels.**
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- 5-3 Electrocatalysis on nanoparticle derived aerogels**
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- 5-4 Multicomponent Gel Networks of Nanoparticles for Photoelectrochemical Applications**
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- 5-5 Ultra-Low-Density Metal Nanowire Aerogels**
Tyler M. Fears,* Fang Qian, Tom Braun, Alyssa L. Troksa, Joshua A. Hammons, Michael H. Nielsen, Jean-Baptiste Forien, Theodore F. Baumann, T. Yong-Jin Han, Sergei O. Kucheyev, and Michael Bagge-Hansen
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Session 6 : AEROGELS FOR ELECTROCHEMISTRY AND CATALYSIS

6-1 Mapping Catalytic Performance of Nickel Nanowires Immobilised in Silica Aerogels for CO₂ Hydration Reaction

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6-2 Aerogel-like composite catalysts synthesized via advanced approaches combining sol-gel and SCF methods

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6-3 Carbon aerogels as cathode matrix for lithium-sulfur batteries

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6-4 Manganese oxides aerogels and nanoparticles obtained in a one-pot one-step process directly in supercritical CO₂

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Session 7 : AEROGEL APPLICATIONS

7-1 Automotive Engine Covers Made From Mechanically Strong Monolithic Polymer Aerogels

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7-2 Ceria-containing Catalytic Aerogels for Applications in Automotive Pollution Mitigation

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7-3 Extending applicability of colloidal nanoparticle-based aerogels: mixed and hybrid structures as well as processable inks.

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7-4 Aerogel-based, light-driven gas pump and VOC removal

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7-5 Applications of Aerogel Technology to Current Biomedical Demands

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- 7-6 Pectin-xanthan aerogel coatings on medical grade stainless steel for hip implants**
Zoran Novak^{a,*}, Gabrijele Horvat^a, Željko Knez^a, Lidija Gradišnik^b, Uroš Maver^b, Klodian Khanari^c, Majaž Finšgar^a
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Session 8 : MODELLING OF AEROGEL FORMATION AND PROCESSING

- 8-1 Polymerization induced phase separation – a mechanism for structure formation in aerogels?**
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- 8-2 Insights into molecular mechanics of nanostructured porous silica aerogel**
Sandeep P. Patil,^{*,†} Ameya Rege,[‡] Mikhail Itskov,[‡] and Bernd Markert[†]
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- 8-3 Molecular modelling study of organically-modified silica aerogels**
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- 8-4 Modelling the mechanical behaviour of dry and wet polysaccharide based aerogels**
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- 8-5 Thermal conductivity of bio-aerogels.**
Sophie Groult, Lucile Druel, Cyriel Rudaz, Tatiana Budtova
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Session 9 : SUPERCRITICAL DRYING

- 9-1 Supercritical drying of aerogels – Thermodynamic considerations for critical process steps.**
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- 9-2 Reduction of compression requirements during aerogel production**
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- 9-3 Investigation of External Mass Transfer Effects in Supercritical Drying of Alcolgel Particles**
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- 9-4 Modeling and scale up of supercritical drying process**
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Session 10 : BIOPOLYMER AEROGELS

10-1 Recent Developments of Transparent Chitosan Aerogel.

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10-2 Chitosan aerogels with skeletal molecular-level enhancement

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10-3 Evaluation of chitosan aerogel for application in aeronautics

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10-4 Self-assembly of cellulose in super-cooled ionic power-law fluids: A facile approach towards novel anisotropic cellulose II aerogels

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10-5 Strain hardening and pore size harmonization by uniaxial densification:

A facile approach towards superinsulating aerogels from nematic nanofibrillated 2,3-dicarboxyl cellulose

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10-6 Cellulose aero/xerogels for moisture sorption.

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10-7 Cellulose aerogels shaping and properties for tailored applications

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10-8 Collagen based aerogels as promising biomaterials for bone tissue engineering

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POSTERS

- P01 Graphene Aerogel-Directed Fabrication of Phase Change Composites.**
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- P02 Subwavelength-Structure-Induced Superblack Carbon Aerogels.**
Ai Du^{1,2,*}, Hongqiang Wang^{1,2}, Wei Sun^{1,2}, Xiujie Ji^{1,2}, Ming Gao^{1,2}, Xinru He^{1,2}, Jun Shen^{1,2}, Bin Zhou^{1,2}
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- P03 Preparation of SiO₂ /bacterial cellulose aerogel composite with dust-free and excellent mechanical performance using TEOS and MTMS co-precursor.**
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- P04 Zirconia aerogel from Polyacetylacetonatozirconium.**
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- P05 Mechanical and electrical characterization of a conductive porous material using a biopolymer aerogel as template and its potential application in biomedical field.**
Ricardo Starbird¹, Roy Zamora-Sequeria¹, Inés Ardao³, Carlos A García-González⁴, Luis Alvarado⁶, Giovanni Saenz⁵, Esteban Avendano²
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- P06 SYNTHESIS OF 3D GRAPHENE OXIDE AEROGELS BY SUPERCRITICAL CO₂**
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- P07 NEW COMPOSITE MATERIALS BASED ON CERAMIC HIGHLY POROUS HEAT-SHIELDING MATERIALS AND AEROGELS**
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- P08 THE INFLUENCE OF PYROLYSIS TEMPERATURE ON THE ELECTROCHEMICAL PROPERTIES OF CARBON AEROGELS.**
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- P09 Core-shell Structure of SeS₂@Carbon Aerogels as Advanced Cathode Material for Li-SeS₂ Batteries .**
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- P10 Strontium Aluminate based aerogel phosphors for the enhanced afterglow properties.**
Gaganpreet Kaur Behrh, Ma Huan, Maria Teresa Delgado Perez, Bernhard Walfort*, Nando Gartmann*, Hans-Rudolf Hagemann*, Hoffmann Patrik*, La Mattina Fabio*, Matthias Koebel*, Albert P. Zeller*
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- P11 Self-assembled 3D N-CNFs/V₂O₅ Aerogels with Core/Shell Nanostructures through Vacancies Control and Seeds Growth as An Outstanding Supercapacitor Electrode Material.**
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- P12 RF-based, Flexible Carbon Aerogels by Sphere Templating.**
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- P13 Hyaluronic acid-alginate aerogel as potential drug carrier**
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- P14 Pectin and pectin composite aerogels: structure-properties correlations and use for drug controlled release.**
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- P15 The performance of low frequency sound-absorption of the Helmholtz resonators with aerogels .**
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- P16 Hierarchical porous carbon monoliths with high compressivestrength for high-temperature thermal insulator prepared through self-sacrificial salt templatingroute**
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- P17 Hydrophobization studies of silica aerogels and their application for controlling drug sustained release**
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- P18 Modification of CdSe/CdS nanorod aerogels by silica coating**
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- P19 Preparation of Lallemania Royleana Seed Mucilage Aerogels via Supercritical Carbon Dioxide Technology**
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- P20 PREPARATION AND ELECTRICAL PERFORMANCE OF Mn₃O₄ AEROGEL AND GRAPHENE-Mn₃O₄ AEROGEL**
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- P21 Polyoxometalate-Based Aerogels for Selective Oxidation Catalysis**
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- P22 Preparation of reduced graphene oxide aerogels by ambient pressure drying**
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- P23 Features of the influence of Al/Si ratio change on properties of aluminosilicate aerogels**
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- P24 Novel silica-organic composite aerogels and their pyrolyzed carbon-silica counterparts**
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- P25 Zeolite-loaded aerogel getters as a primary vacuum sorption pump in planetary instruments**
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- P26 Ultra strong, thermally insulating and flame resistant aerogel based on modified cellulose nanofibers for energy efficiency building**
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- P27 Particle-based silica aerogel materials in building applications**
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- P28 Influence of the incorporation of carbon nanotubes in silica-based aerogels for pollutants adsorption**
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- P29 Silica aerogels and xerogels as efficient heavy metal adsorbents**
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- P30 Effect of different silylation agents on the properties of Ambient Pressure Dried TEOS/VTMS Aerogels**
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- P31 Silica aerogel fiber production via extrusion process**
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- P32 Supercritical carbon dioxide drying of monoliths and compositesorganogels: from pilot to industrial scale proces**
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- P33 Cellulose aerogels made from waste denim with a special pore structure**
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- P34 Illumination of a Single Point-Like Voxel within a Silica Aerogel Monolith via Photon Upconversion and Pulsed Lasers: Towards Real-Time 3D Optical Strain Mapping**
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- P35 Aerogel as space debris collector**
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- P36 Metallic Gels in the form of inks for large-scale printing**
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- P37 Preparation and investigation of silica-carbon aerogels as materials for gas sensors**
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- P38 Super-hydrophobic cellulose aerogel as a reusable, and recyclable oil absorbents**
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- P39 Drug-loaded Chitosan Aerogels for Chronic Wound Applications**
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- P40 Aerogel based drug delivery systems – Relationship between matrix structure and release mechanism**
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- P41 Synthesis of Highly Cross-linked Homogeneous Polyurea and Polyurea-SiO₂ Aerogels**
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- P42 Preparation and characterization of silica aerogels from by-product silicon tetrachloride under ambient pressure drying**
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- P43 PRISTINA™ AEROGELS FOR ENVIRONMENTAL POLLUTION CONTROL AND MITIGATION OF GLOBAL WARMING.**
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- P44 Selection of suitable aerogels for pharmaceutical applications by inverse supercritical fluid chromatography**
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- P45 Lanthanum doped Ceria Nanocubes in Silica Aerogel Nanocomposites**
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- P46 Rapid Preparation of Noble Metal Aerogels**
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- P47 Core-shell CoP@C nanoparticles embedded in 3D cross-linked graphene aerogels for efficient hydrogen evolution reaction**
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- P48 Influence of pore structure of TiO₂/ SiO₂/Ag ternary composite aerogels on photogradation of oxytetracycline.**
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- P49 Spatially resolved SAXS on silica aerogel – analysis of structural inhomogeneities.**
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- P50 Up-scaling of resorcinol-formaldehyde (RF) and carbon (C) aerogel synthesis to pilot plant scale production for their use as sand core additives in the foundry industry**
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- P51 Robust, thermal-insulating polybenzoxazine aerogels based on 4,4'-diamino- diphenylmethane (MDA) benzoxazine monomer**
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- P52 Silica-PAMAM dendrimer nanoparticles doped with β,β-dimethylacrylalkannin along with cytotoxic activity on hepatocellular carcinoma**
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- P53 New analytical tools to study aerogel surface chemistry and dynamics - Quantitative solid-state NMR and quasi-elastic neutron scattering**
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- P54 Aerogel-honeycomb sandwich composites based on resorcinol-formaldehyde and silica**
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- P55 Manufacturing Curvilinear Shaped Aerogels Using Rapid Supercritical Extraction**
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- P56 On the preparation and performance of ETFE silica aerogel compounds**
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- P57 Inkjet Printing of Aerogels: Promising Technology for the Processing of Nanostructured Microparticles for Life Sciences Purposes**
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- P58 Preparation of nickel-silica aerogels by ambient pressure drying**
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- P59 Acoustic Properties of Monolithic Silica Aerogels**
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- P60 3D fiber reinforced polymers using cellulose aerogels**
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- P61 Synthesis and structural properties of novel hybrid (SiO₂-PVA) aerogels**
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- P62 Coupling of gaseous and solid phase thermal transport in aerogels**
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- P63 A Simple Method for Preparation of Silica Aerogels Doped with Monodispersed Au Nanoparticles in Homogeneous Concentration**
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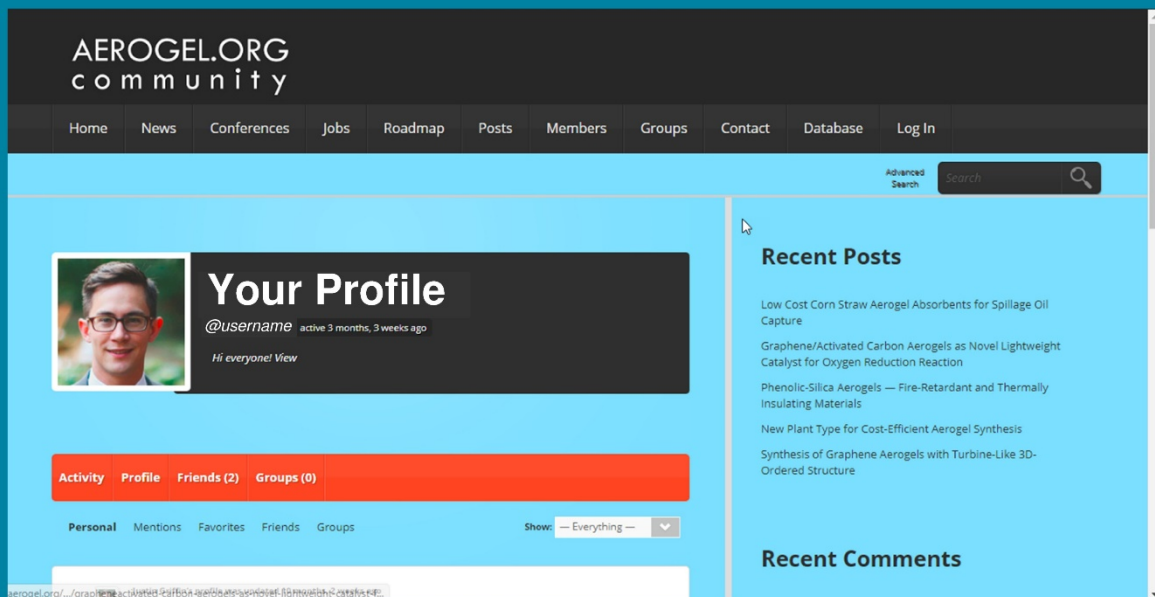
- P64 A comparison between two different supercritical drying processes to produce silica aerogels**
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- P65 Influence of ultrasonication on gelation and properties of MTMS-based aerogel**
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- P66 Supercomputer ab initio simulation for drug delivery into the aerogels.**
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- P67 Protein-based bio-aerogels derived from canola seed meal.**
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- P68 Effect of Ce and SO₄²⁻ on the physicochemical properties of Mn-TiO₂ as new nanostructured aerogel catalysts for the low temperature NO-SCR by NH₃ in excess O₂**
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- P69 High Performance Aerogel Concrete**
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- P70 Polypyrrole-coupled W₁₈O₄₉ nanowire/reduced graphene oxide aerogel for room-temperature chemiresistive sensing**
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- P71 Synthesis of a novel three-dimensional Na₂SO₄@SiO₂@Al₂O₃-SiO₂ phase change material doped aerogel composite with high thermal resistance and latent heat**
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- P72 Monolithic and strong polymer(resorcinol-formaldehyde) reinforced alumina aerogels composites with interpenetrating networks**
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- P73 Characterization of cellulose and its composite aerogels**
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- P74 Novel chitosan aerogels for drug delivery and tissue engineering applications**
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- P75 Mathematical modeling of aerogels' structure and characteristics.**
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- P76 Ambient Pressure Drying Synthesis of Silica Aerogel Composites with Various Precursors**
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- P77 In situ visualization of mass transport inside transparent gels during drying or impregnation using Raman-line-imaging**
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- P78 Shape- and size-controlled synthesis of CeO₂ nanoparticles and their assembly into aerogels**
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- P79 CO₂-induced spray gelation of alginate particles**
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- P83 Technical scale production of aerogel nonwoven**
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